

CLAIMS

1. A dispersion comprising particles of metal oxide having a median volume particle diameter in the range from 24 to 42 nm, dispersed in a medium which comprises a mixture of at least one polar material having an interfacial tension of less than 30 mNm^{-1} and at least one non-polar material having an interfacial tension of greater than 30 mNm^{-1} .
2. A dispersion according to claim 1 wherein the metal oxide particles have a mean crystal size in the range from 4 to 10 nm.
3. A dispersion according to either one of claims 1 and 2 wherein at least 40% by weight of metal oxide particles have a crystal size within the range 5 to 9 nm.
4. A dispersion according to any one of the preceding claims wherein less than 16% by volume of metal oxide particles have a volume diameter of less than 9 nm below the median volume particle diameter.
5. A dispersion according to any one of the preceding claims wherein less than 30% by volume of metal oxide particles have a volume diameter of less than 5 nm below the median volume particle diameter.
6. A dispersion according to any one of the preceding claims wherein more than 84% by volume of metal oxide particles have a volume diameter of less than 17 nm above the median volume particle diameter.
7. A dispersion according to any one of the preceding claims wherein more than 70% by volume of metal oxide particles have a volume diameter of less than 6 nm above the median volume particle diameter.
8. A dispersion according to any one of the preceding claims wherein the metal oxide particles have an extinction coefficient at 524 nm in the range from 0.4 to 1.2 l/g/cm .
9. A dispersion according to any one of the preceding claims wherein the metal oxide particles have an extinction coefficient at 360 nm in the range from 5 to 11 l/g/cm .
10. A dispersion according to any one of the preceding claims wherein the metal oxide particles have an extinction coefficient at 308 nm in the range from 40 to 52 l/g/cm .

11. A dispersion according to any one of the preceding claims wherein the metal oxide particles have (i) a median volume particle diameter in the range from 29 to 37 nm, and/or (ii) less than 10% by volume of particles having a volume diameter of less than 11 nm below the median volume particle diameter, and/or (iii) less than 16% by volume of particles having a volume diameter of 8 nm below the median volume particle diameter, and/or (iv) less than 30% by volume of particles having a volume diameter of less than 5 nm below the median volume particle diameter, and/or (v) more than 90% by volume of particles having a volume diameter of less than 27 nm above the median volume particle diameter, and/or (vi) more than 84% by volume of particles having a volume diameter of less than 17 nm above the median volume particle diameter, and/or (vii) more than 70% by volume of particles having a volume diameter of less than 6 nm above the median volume particle diameter.
12. A dispersion according to any one of the preceding claims wherein the particles of metal oxide have an extinction coefficient at 524 nm in the range from 0.5 to 1.1 l/g/cm, an extinction coefficient at 450 nm in the range from 1.0 to 2.0 l/g/cm, an extinction coefficient at 360 nm in the range from 6 to 10 l/g/cm, an extinction coefficient at 308 nm in the range from 44 to 48 l/g/cm, a maximum extinction coefficient in the range from 60 to 64 l/g/cm, and a $\lambda(\text{max})$ in the range from 274 to 282 nm.
13. A dispersion according to any one of the preceding claims wherein the polar material has an interfacial tension in the range from 10 to 25 mNm⁻¹.
14. A dispersion according to any one of the preceding claims wherein the non-polar material has an interfacial tension in the range from 35 to 45 mNm⁻¹.
15. A dispersion according to any one of the preceding claims wherein the difference in the interfacial tension of the polar material and the non-polar material is in the range from 13 to 20 mNm⁻¹.
16. A dispersion according to any one of the preceding claims wherein the ratio of polar to non-polar material is in the range from 30 to 70:30 to 70% by weight.
17. A dispersion according to any one of the preceding claims wherein the polar material is selected from the group consisting of are triethylhexyl triglyceride, C12-15 alkyl benzoate, caprylic/capric triglyceride, isononyl isononanoate, isostearyl neopentanoate, and octyldodecyl neopentanoate.